**Upper-Plate Earthquake Swarms Remotely Triggered by the 2012 Mw-7.6 Nicoya Earthquake, Costa Rica.**

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Remotely triggered seismicity that takes place at distances greater than 1–2 fault lengths appears to be a frequent phenomenon after large earthquakes, including damaging upper-plate 5.0-to-6.0 magnitude earthquakes in Costa Rica after the large (Mw > 7.0) inter-plate earthquakes in 1983, 1990, and 1991. On September 5, 2012, an inter-plate 7.6-Mw earthquake struck the Nicoya Peninsula, triggering upper-plate seismicity in the interior of Costa Rica. In this study, we analyze the largest earthquake swarms that took place during the first five months after the Nicoya earthquake. These swarms occurred at distances of 200 to 300 km from the Nicoya source region in three different tectonic settings: the Calero Island near the Costa Rica-Nicaragua border in the backarc Caribbean region, the Cartago area in the central part of Costa Rica near the active volcanic arc, and the San Vito area in the Costa Rica-Panama border region, at the southern flank of the Talamanca Cordillera, an inactive portion of the magmatic arc. The Calero swarm with 64 2.0-to-4.2 Mw earthquakes took place from September 22 to October 9, 2012. The earthquake pattern suggests a smaller-scale fault as a possible source even though this swarm is located along the inland projection of the Hess Escarpment. The Cartago swarm with 284 2.0-to-3.7 Mw earthquakes occurred from September 5 to October 5, 2012. The location and left-lateral solution of the largest event focal mechanism suggest that the Aguacaliente fault, which caused the deadliest earthquake in Costa Rican history on May 4, 1910 (Ms 6.4), is the source of some of this triggered seismicity. The San Vito earthquake swarm with 30 2.0-to-4.5 Mw earthquakes occurred between December 9, 2012 and January 28, 2013. These earthquakes occurred in the vicinity of the San Vito and Agua Buena faults, which are located along the inland projection of the Panama Fracture Zone. Documenting remotely triggered earthquakes may provide us with insight into the physics of the earthquake cycle, and may greatly improve seismic hazards assessment by illuminating active structures within the interior of Costa Rica and by pointing to where the next earthquake might be located.

**INDEX TERMS:** [7200] SEISMOLOGY, [8118] TECTONOPHYSICS / Dynamics and mechanics of faulting, [8170] TECTONOPHYSICS / Subduction zone processes.

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